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Patent Abstracts of Japan

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APPLICANT: DOWA MINING CO LTD;

INVENTOR: FUJIWARA SATOSHI;

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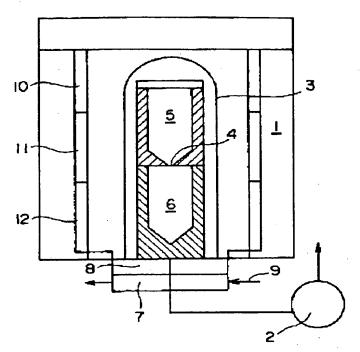
TITLE

SINGLE CRYSTAL COPPER TARGET

AND ITS PRODUCTION AS WELL AS

SEMICONDUCTOR INTERNAL WIRING

FORMED BY USING THE SAME



ABSTRACT :

PROBLEM TO BE SOLVED: To provide high-purity single crystal copper with which the production of a semiconductor element having highly corrosion resistant finer wirings is possible by sufficiently utilizing EM resistance and SM resistance which are the advantages of copper by forming film wirings on an Si substrate, thereby forming the semiconductor element, and a process for producing the same and further a sputtering target consisting of the resulted single crystal copper as well as the semiconductor element having the wirings formed by using this target.

SOLUTION High-purity copper having contg. ≤0.1ppm silver and sulfur in total and having purity of ±99.9999wt.% is used as a starting raw material. This raw material is put into a raw material crucible 5 arranged in an electric furnace 1 and is melted. The molten copper is dropped to a lower single crystal casting mold 6 from the melt dropping hole 4 in the bottom of the crucible. During this time, the temp. is controlled by upper, middle and lower twaters 10, 11, 12 and the inside of a quartz outside cylinder 3 is evacuated by a vacuum descharge device 2. A heat insulating trap 8 exists in the bottom of the fumace and a water context trange in which cooling water 9 flows is arranged on the outer side thereof. The head purity single crystal copper adequate as the target material for forming the winner of the semiconductor element is obtd. in the single crystal casting mold of this

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